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Pressure adhering waterproof sheet - comprises embossed cover layer placed over adhesive surface of main layer

Patent Assignee: NITTO ELECTRIC IND CO (NITL )

Number of Countries: 001 Number of Patents: 002

**Patent Family:**

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**Abstract (Basic): JP 59053787 A**

The sheet provides good waterproof and adhesive properties when subjected to pressure. It is suitable for producing roofing sheet, which adheres to the base board of the roof on being pressed.

An embossed cover layer is laid over the adhesive surface of a main layer having a pressure sensitive adhesive so that the projections on the embossed cover layer are buried in the adhesive surface of the main layer to protect this surface. The main layer may be made of unvulcanised rubber or high mol. wt. sheet. The projections form grooves into the surface of the main layer, when the cover layer is peeled off. The object is to produce a sheet allowing air between the sheet and base board to be easily vented.

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54. Name of invention: Manufacturing Method for Pressure Sensitive Waterproof Sheet

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## Detailed Explanations

### 1. Name of Invention

Manufacturing method for pressure sensitive waterproof sheet

### 2. Patent Claims

(1) Manufacturing method for pressure sensitive waterproof sheet which involves formation of an indented and protruded surface on a peel-able sheet which is then temporary attached to the adhesive surface, the indented and protruded surface of the peel-able sheet is next placed against the adhesive surface of an (unformed) pressure sensitive waterproof sheet, pressure is applied on the two sheets, producing a (formed) pressure sensitive sheet.

### 3. Detail Explanation of Invention

This invention concerns the manufacturing method for a pressure sensitive waterproof sheet, specifically, it concerns waterproof sheet which is attached to a base material by pressure sensitive adhesive, such as roofing sheet, etc..

Usually, a waterproof sheet is laying on a surface which requires waterproofing; usage of such waterproof sheet is very desirable, because the watertightness of the pressure sensitive adhesive joint and the excellent adhesion with the foundation surface.

However, the waterproof sheet, mentioned above, when it is installed on a foundation which has a very large and smooth surface, air is trapped between the sheet and the foundation; during pressing, such air move around, complete adhesion can not be obtained; also gas may be evaporated from the foundation by heating and retained between the sheet and the foundation surface, as a result, full adhesion can not be achieved.

In order to resolve such problems, attempts have been made to expel the internally entrapped air through grooves forming on the adhesion surface; however, the adhesion surface, usually is very soft and pliable, grooves formed during manufacturing are disappearing naturally during storage over time, they often become totally useless during application of the sheet.

In view of the problems mentioned above, the objective of this invention is to provide a manufacturing method which allow the formation of entrapped air expulsion grooves on the adhesive surface of a waterproof sheet, also the grooves will not disappear after prolong storage; the manufacturing method is characterized by first, temporarily attach a peel-able sheet with indented and protruded surface to the adhesive surface (of the waterproof sheet), next, the sheets are pressed with the indented and protruded surface of the peel-able sheet facing the pressure sensitive adhesive of the waterproof sheet.

Following is an explanation of this invention using an application example.

Figure 1 is a process sketch of this invention.

The manufacturing method of waterproof sheet of this invention involved: first, a synthetic high molecular weight sheet of un- or non-vulcanized rubber, or a synthetic high molecular weight sheet with an adhesive layer was prepared by conventionally methods; indented and protruded surface 4A were formed on a peel-able sheet 3, using grooves forming rolls 4, and 4', which was then temporary attached over the adhesive surface 2 of a pressure sensitive waterproof sheet 1; next, with the indented and protruded surface 4A of the peel-able sheet 3 facing the adhesive surface 2 of the pressure sensitive waterproof sheet 1, the two sheets were pressed together with press rolls 5 and 5', allowing the indented and protruded surface 4A temporarily and strongly bit into the adhesive surface 2.

In the application example above, where an indented and protruded surface 4A was formed on the peel-able sheet 3, it was shown that the indented and protruded surface were formed from both inside and outside; however, as shown in Figure 2, the indented and protruded surface 4A may also be formed from just one side.

During its application, the peel-able sheet 3 is peeled off from the pressure sensitive waterproof sheet 1, manufactured by the method mentioned above, which is then spread out and installed on area where it is needed.

At this time, the grooves 2A, which are formed by the indented and protruded surface 4A on the peel-able sheet 3, on the pressure sensitive adhesive surface, allow the air entrapped between the foundation surface and the sheet to be expelled, making uniform adhesion possible.

In this invention, because the pressure sensitive waterproof sheet which is constructed as mentioned above, have corresponding indented grooves, formed by the indented and protruded surface on the peel-able sheet, and during prolong storage, the peel-able sheet is fit into the adhesive layer such that the grooves in the adhesive layer will not be disappearing. During application, the sheet can be reliably spread out and attached. Also, during application of the sheet of this invention, one may simply apply a roller and press over a peel-able paper, it is very cost effective, as well as having many other advantageous effects.

#### 4. Brief Explanation of Figures

Figures 1 and 2 are sketches explaining process involved in this invention.

Where 1 is a pressure sensitive sheet, 2 is the pressure sensitive adhesive surface, 3 is a peel-able sheet, 4 are groove forming rolls, and 4A is the indented and protruded surface.

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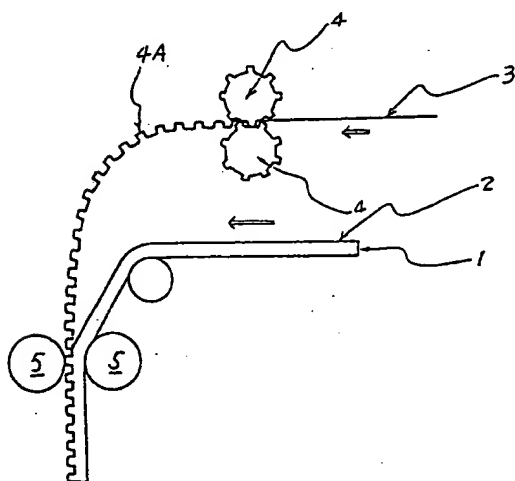


Figure 1

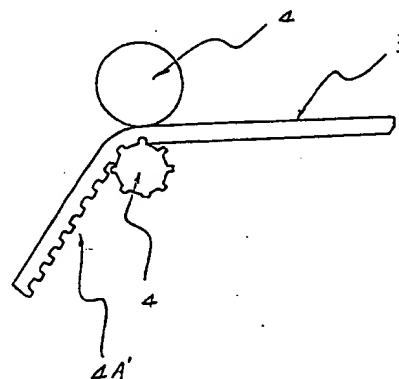


Figure 2